

Mr. James D. Wells
October 30, 1992
Page 7

1991.

Shortly after that meeting Amtech was contacted by a Teletrac Vice President for Engineering in its California office for the purpose of arranging a meeting. On September 11, several Amtech personnel (including Amtech's Vice President for Research and Development) and I met in Dallas with two representatives from Teletrac's California office. Going into the meeting, we hoped that through mutually cooperative efforts, any interference problem could be resolved.

During the September 11 meeting Amtech was told that the Teletrac system was extremely sensitive to interference and that problems were being experienced not only from the Amtech tag reader technology but also from others in the band as well, including antishoplifting field disturbance sensors authorized under Part 15.¹⁵ In fact, the PacTel representatives cited as an example a "Sensormatic" service that could interfere with the Teletrac system seven miles away. Amtech was also told that PacTel wanted no signal at the input of its receivers greater than -100 dBm (i.e. a signal that Amtech calculates corresponds to a field strength at the receive antenna of about 26 dB above one microvolt per meter).¹⁶

Also discussed were various possible means for eliminating the interference alleged by PacTel and whether there was anything that could be done by PacTel to resolve the alleged interference, i.e., any solution short of having Amtech move all of the Dallas area readers out of the 904 - 912 MHz band. As you know, the Commission Rules require all parties to seek to resolve harmful interference problems "by mutually satisfactory arrangements."¹⁷ While there was some discussion of filtering the Amtech signals, the PacTel representatives insisted that the solution lay in clearing the band of all Amtech facilities. When questioned about their proposal to grandfather Amtech type systems, the PacTel representative responded that they had a very aggressive program of moving users out of the band and did not expect there would be much left to

¹⁵ Amtech realizes that Part 15 operations are secondary to all licensed operations in the band.

¹⁶ We have also received conflicting information as to the power of the PacTel mobiles. Correspondence from PacTel and FCC license records have shown mobiles at 158 watts. An exhibit attached to the Petition for Rulemaking assumed a power of 5 watts with a -6dB gain antenna. Our understanding now is that the petition more accurately reflects PacTel's system.

¹⁷ 47 CFR 90.173(b).

Mr. James D. Wells
October 30, 1992
Page 8

grandfather.¹⁸

The discussion at this meeting led us to suspect that PacTel was going to do nothing to resolve the alleged interference. This was contrary to our earlier expectations and our understanding of the obligation of mutual cooperation imposed by the FCC's Rules.¹⁹ Also, it was only at this time that we learned how fragile the PacTel system apparently is.

Based upon the information we had learned at the September 11 meeting, we were able to finalize a definitive action plan to resolve the alleged interference. We reviewed the interference situation in Dallas, taking into account the discussion on September 11. Because it was apparent that PacTel would not change its system, Amtech then completed a comprehensive analysis of the Dallas frequency use.²⁰

The tentative solution (on paper) required replacing numerous licensed readers.²¹ As you may know, the Amtech tag has a response over the 902 - 928 MHz band. Because the reflected modulated signal from the tag has an occupied bandwidth of more than two megahertz and a necessary bandwidth of some 800 kHz, Amtech has had to space readers in close proximity some two megahertz apart. If PacTel's demands were to be accommodated at the Dallas North Tollway, the readers would have to be placed closer together in

¹⁸ In fact, we were advised that PacTel spends upwards of \$1,000,000 per year to move other users out of the spectrum. In spite of the numerous times Amtech has responded to PacTel's requests to remove interference, according to our records, Amtech has only received approximately \$1,000 from PacTel for its frequency relocation efforts.

¹⁹ To date, PacTel has given no indication of what it would do to make its system sufficiently robust to operate in the shared environment required by the FCC's Rules.

²⁰ If the information given by PacTel is to be believed.

Mr. James D. Wells
October 30, 1992
Page 9

frequency and relocated to the other subband 918 - 926 MHz.²² Also, while Amtech has experimental authority to operate on a variety of frequencies in the band for the purpose of making tests and proving its systems, any permanent relocation to other frequencies would require modification of existing authorizations held by both the DFW Airport and Amtech for the Dallas North Tollway.

Before Amtech could propose such a relocation and relicensing, it was necessary to test the closer configurations that would make such operation feasible. The DFW Airport system serves approximately 1,200 users and the Dallas North Tollway serves more than 50,000 vehicles. To have proposed a change without a test would have been both technically unsound and injurious to the public interest.

Moreover, because the DFW Airport uses a different type of tag than that employed at the Dallas North Tollway, in September 1992, Amtech lowered the effective radiated power on the readers at DFW Airport to less than 200 milliwatts.²³ The readers were licensed to employ up to 32 watts of effective radiated power. This is the modification of which PacTel complains.²⁴ To our knowledge, PacTel has not done an analysis to determine whether this power reduction has reduced or eliminated the interference allegedly being experienced at the DFW Airport.

All this was occurring during the time period that PacTel asserts Amtech was doing nothing. This assertion is particularly galling since PacTel was advised during the first week in October in a telephone conversation that Amtech was conducting the necessary tests in an attempt to find a technical solution to the interference problem. It was also reported that Amtech would complete such tests in a couple of weeks.²⁵ In light of these efforts and this telephone conversation, we were surprised at the

²² The situation is further complicated because PacTel's co-proponent of exclusive use of major portions of the 902 - 928 MHz band, Ameritech/METS, has been filing protests with the FCC against license applications by users of Amtech technology for use of the subband 918 - 926 MHz.

²³ The tips of the antennas are approximately 7' above ground, and are pointed toward the ground at an angle of approximately 25-30 degrees.

²⁴ Fath Affidavit at Paragraph 9.

²⁵ In fact, we recently completed such tests and stand ready to suggest modifications to the DFW Airport and Dallas North Tollway systems that should resolve the interference situation.

Mr. James D. Wells
October 30, 1992
Page 10

October 13 Fath letter to the DFW Airport and the October 20 letter to you. We note that PacTel did not have the courtesy of awaiting the completion of Amtech's testing before filing its protest with your office.

The history of the cooperation by Amtech with respect to the situation in California has also been mischaracterized by PacTel. If you would like us to provide the "chapter and verse" on this matter, please contact me and I will be pleased to do so. I will mention, however, that as late as September 15, 1992, PacTel wrote Amtech thanking us for our prior efforts in providing assistance in resolving interference at locations in California.

In sum, we at Amtech have been working diligently to resolve a problem that we believe is largely due to the inability of PacTel's system to operate in a shared environment as required by FCC Rules. In the meantime, PacTel has been engaged in concerted efforts to interfere with the FCC's licensing process and the business of our customers.

III. PacTel is wrong as a matter of law in criticizing the Private Radio Bureau's licensing of Amtech technology and in the characterization of Amtech as a "signpost" system.

Private Radio Bureau Licensing

The legitimacy of the Private Radio Bureau's longstanding policy of authorizing tag reader systems has been debated at length in RM-8013.²⁶ Amtech has maintained that the key principle governing the Commission's 1974 decision adopting the interim rule set forth in Section 90.239 was one of according flexibility for the development of automatic vehicle monitoring technology. The licenses issued for use of Amtech technology and that of other makers of tag systems were not doled out in the dark of night through a mistake repeated many times over. Amtech has consistently worked to explain its technology to the Private Radio Bureau staff in both Gettysburg and Washington. The Bureau made no mistakes. It exercised properly its lawful authority to license the Amtech technology in shared spectrum on a coequal basis with PacTel. The Amtech system is a "wideband" system for a variety of reasons, including that the occupied bandwidth of the reflected signal is more than 2 MHz (while the necessary bandwidth is 800 kilohertz), and, in most cases, including both the DFW Airport and the Dallas North Tollway, there is the need to use multiple readers on different frequencies separated by enough spectrum in order to accommodate the data transmission requirements without internal

²⁶ See e.g. Comments of Amtech, filed July 23, 1992.

Mr. James D. Wells
October 30, 1992
Page 11

interference.

Signpost

PacTel is also incorrect in its October 20 classification of the Amtech system as a signpost system that is secondary to the PacTel system. While it is not my intent to discuss in great detail here the reasons why the PacTel argument is incorrect, a few words are in order since the issue was raised.

The PacTel Rulemaking Petition contains no discussion of "signpost" systems. The signpost argument was a straw grasped at by PacTel after reviewing the numerous comments filed in opposition to its petition for rulemaking.²⁷ The signpost systems described in the 1972 Notice of Proposed Rulemaking in Docket 18302²⁸ and in the 1974 Report and Order²⁹ involved a powered transmitter on the vehicle that would transmit to many fixed receivers located at signposts as the vehicle moved throughout a large area or the converse (a powered signpost transmitter that would modulate a signal to transmit its identity to a mobile receiver as the vehicle moved through the area populated by signposts). In the former version of signpost systems, the signpost receivers would send a message to a central location that a vehicle equipped with a low powered transmitter had passed nearby. The latter version informed the vehicle of its location which was then transmitted to a central location by a conventional land mobile system on board the vehicle.

Neither version reflects the techniques employed by Amtech. As such, Amtech does not offer a "signpost" system and licensees that use its technology are not secondary to the PacTel licensees.³⁰ In

²⁷ It was first advanced by PacTel in PacTel's Reply to the opposition comments, filed August 7, 1992. I will furnish you copies of all the relevant comments, including the numerous ones filed in opposition to the PacTel proposal, if you wish.

²⁸ Further Notice of Inquiry and Notice of Proposed Rulemaking, Docket No. 18302, rel. July 3, 1972, at ¶ 4.

²⁹ Report and Order, Docket No. 18302, rel. Aug. 8, 1974, at ¶ 7.

³⁰ The Amtech system is an "unconventional pulsed pseudo doppler radar system" (the reader sends out a cw signal, like cw doppler radar, and the tag returns a pulsed signal that contains true doppler signal as well as a code -- containing pseudo doppler signal). After the tag on a vehicle is illuminated with a burst of radio frequency energy, the signal strength of the reflected modulated pulse is measured to determine if the tag is within

Mr. James D. Wells
October 30, 1992
Page 12

its typical application, the Amtech system is triggered as a vehicle approaches a tollgate or (in the case of the DFW Airport) a designated area such as restricted curbside space or lane. An unmodulated signal is then directed toward the vehicle. Unlike signpost systems, the tag on the vehicle contains no transmitter. Rather, a proprietary design tuned circuit in the tag is modulated with the identity of the tag by varying the efficiency of the tuned circuit. This variation produces a frequency shift in the reflection that contains the modulated signal. The signal strength of the modulated signal is on the order of 40 dB below that of the illuminating unmodulated signal. A homodyne receiver is used to strip off the modulation from the received signal and the decoded information is then fed to an information processing system to debit the account of the toll customer and, in the case of the DFW Airport tags, to keep track of the time the vehicle dwells in a particular area in addition to debiting an account. In this manner the DFW Airport is able to make more efficient use of limited curbside space and to reduce delays that would otherwise occur with the logging in and out of vehicles and the payment of tolls. For those who use the Dallas North Tollway the system expedites traffic flow and reduces the waiting time for all concerned including those who do not have vehicles equipped with tags (since the overall throughput of the road is increased).

Additionally, unlike the signpost systems, the Amtech technology is not deployed in a grid throughout a metropolitan area. Thus, from a simple electromagnetic compatibility standpoint the implications of Amtech technology are far more favorable. Unlike the situation with signposts, low powered transmitters are not used to blanket an area. In short, PacTel is mistaken.

IV. Amtech remains willing to work with PacTel to resolve the problems alleged by PacTel.

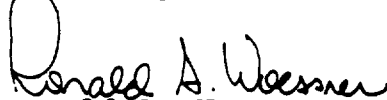
We remain willing to cooperate further with PacTel to explore

Mr. James D. Wells
October 30, 1992
Page 13

verifiable evidence from PacTel that the recent power level reduction has not solved PacTel's interference problem allegedly caused by the operations of the DFW Airport system. If PacTel agrees to support our plan, we are also prepared to seek modification of the licenses we hold for operations on the Dallas North Tollway.

Finally, we would be pleased to work with you in answering questions concerning the Amtech technology and the many automatic vehicle monitoring purposes that it serves.

Sincerely,


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CERTIFICATE OF SERVICE

I hereby certify that on this 4th day of June, 1993, I caused copies of the foregoing "Opposition to Application for Freeze" to be mailed via 1st-class postage prepaid mail to the following:

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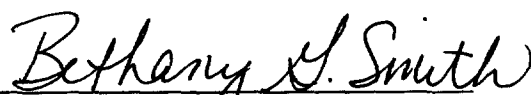
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